The Dalles Municipal Watershed

2013 Government Flat Complex Fire

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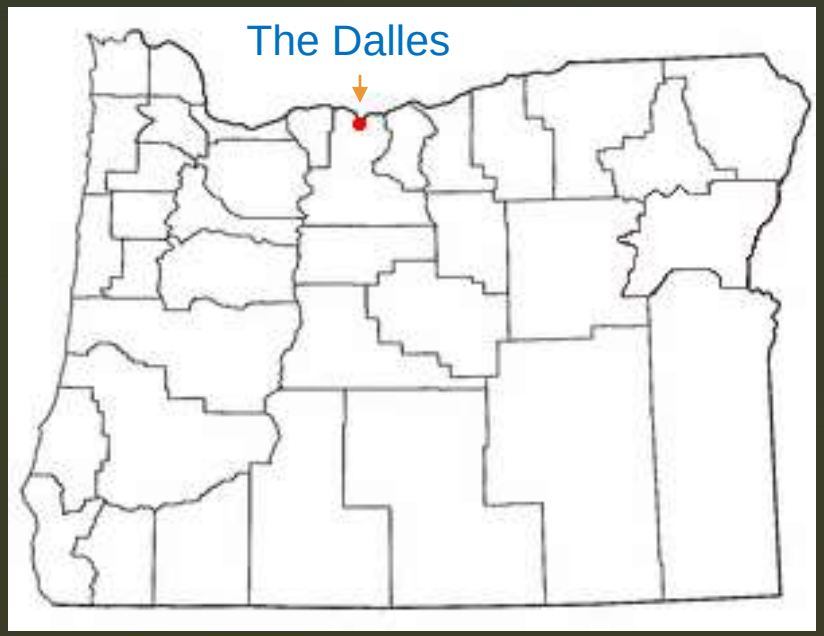
City of The Dalles

Topics

- Water Treatment Plant and Watershed overviews
- Fire Statistics
- Initial Water Supply Concerns
- Impact and Recovery Planning
- Post-fire Concerns
- Rehabilitation Plan
- Monitoring and Early Warning Systems
- Funding
- Post-fire Water Quality Impacts
- After-thoughts


The Dalles

Water Treatment Plant

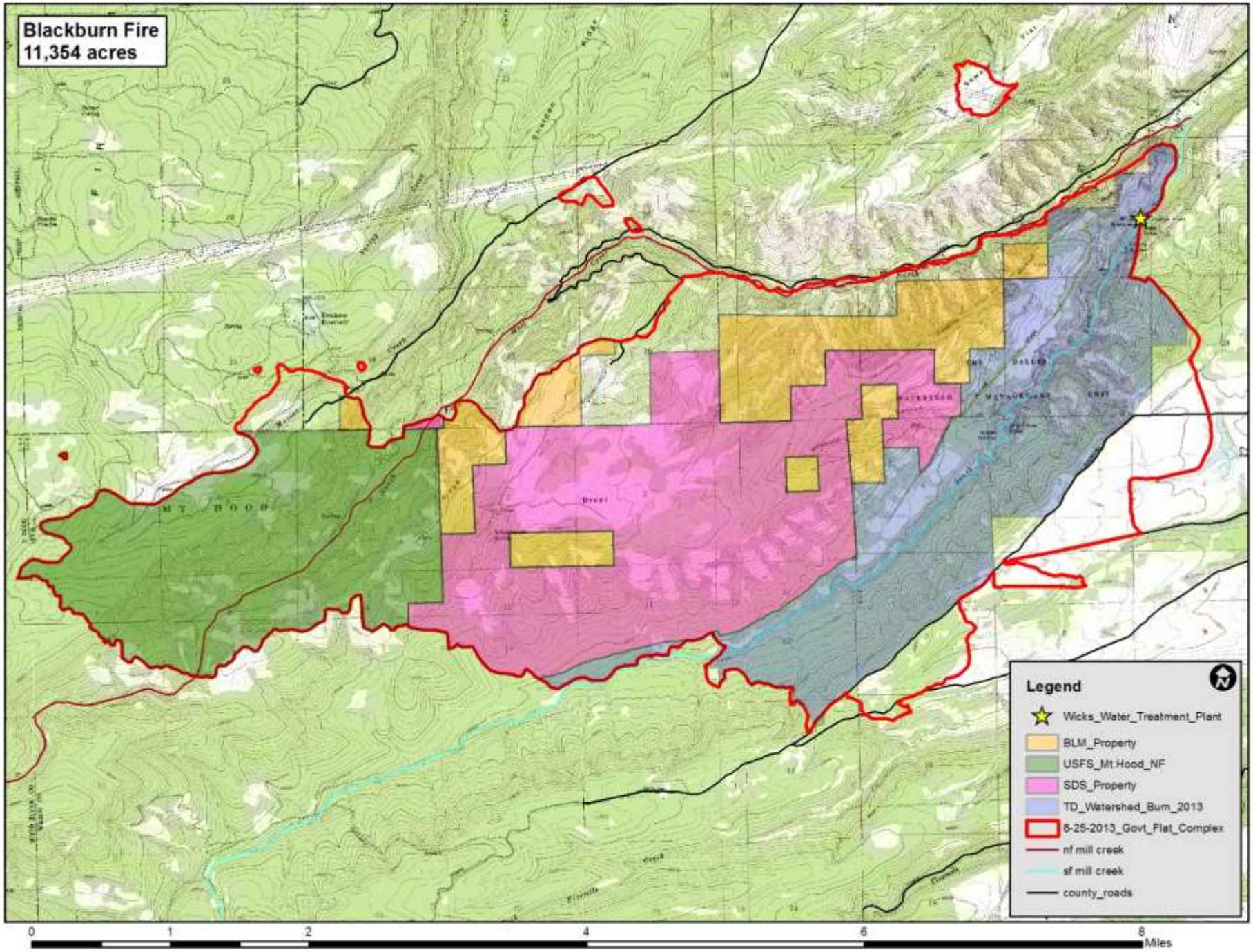
- Service population – 12,500
- Annual water supply – 80-90% surface water
- Wicks Water Treatment Plant – Class 4 conventional water treatment, staffed 24/7, one operator per shift
- Rated capacity of 6.05 MGD (max flow for 2.5-log Giardia removal)
- Plant is a member of the Partnership for Safe Water; 0.1 NTU finished water goal

The Dalles Municipal Watershed

- 22,000-acre Watershed cooperatively managed for protection of water quality and quantity
- City owns Crow Creek Dam with 267 MG impoundment
- 1/3 owned by the City, nearly 2/3 owned by US Forest Service, 1 industrial forest landowner
- 1912 and 1972 agreements with US Forest Service to manage Watershed to protect water quality/quantity

Fire Statistics

- Fire occurred in August 2013
- Blackburn Fire, inside Watershed, was one of three fires started by lightening that became the Government Flat Complex Fire
- Total area burned = 11,354 acres
- Area burned within The Dalles Municipal Watershed = 5400 acres
- Burned area extends from City water treatment plant 4 miles upstream
- Fire was in same area that burned in 1967; adverse water quality impacts for about 20 years


Blackburn Fire
11,354 acres
Legend
Wicks_Water_Treatment_Plant
BLM_Property
USFS_Mt.Hood_NF
SDS_Property
TD_Watershed_Burn_2013
8-25-2013_Govt_Flat_Complex
nf mill creek
sf mill creek
county_roads
0
1
2
4
6
8
Miles

Initial Water Supply Concerns

During the fire:

- WTP operation or evacuation –
  - Plan for back-up water supply if needed (City)
- Retardant –
  - Coordination with IC Aerial Attack planners (IC)
  - Field observation of retardant use (IC/City)
  - Monitored raw water quality at WTP 3x/day during fire – visual, cyanide (City)
- Ash/smoke –
  - After a couple days of high-intensity burning and heavy smoke, received “smoky taste/odor” complaints
  - Conducted WTP and dist’n system sampling, increased blending with groundwater, added PAC at WTP (City)
- Fuel/lubricants from fire fighting equipment
  - Minimize creek crossings (IC/City)
  - Secondary containment and spill pads for all pumps (IC)

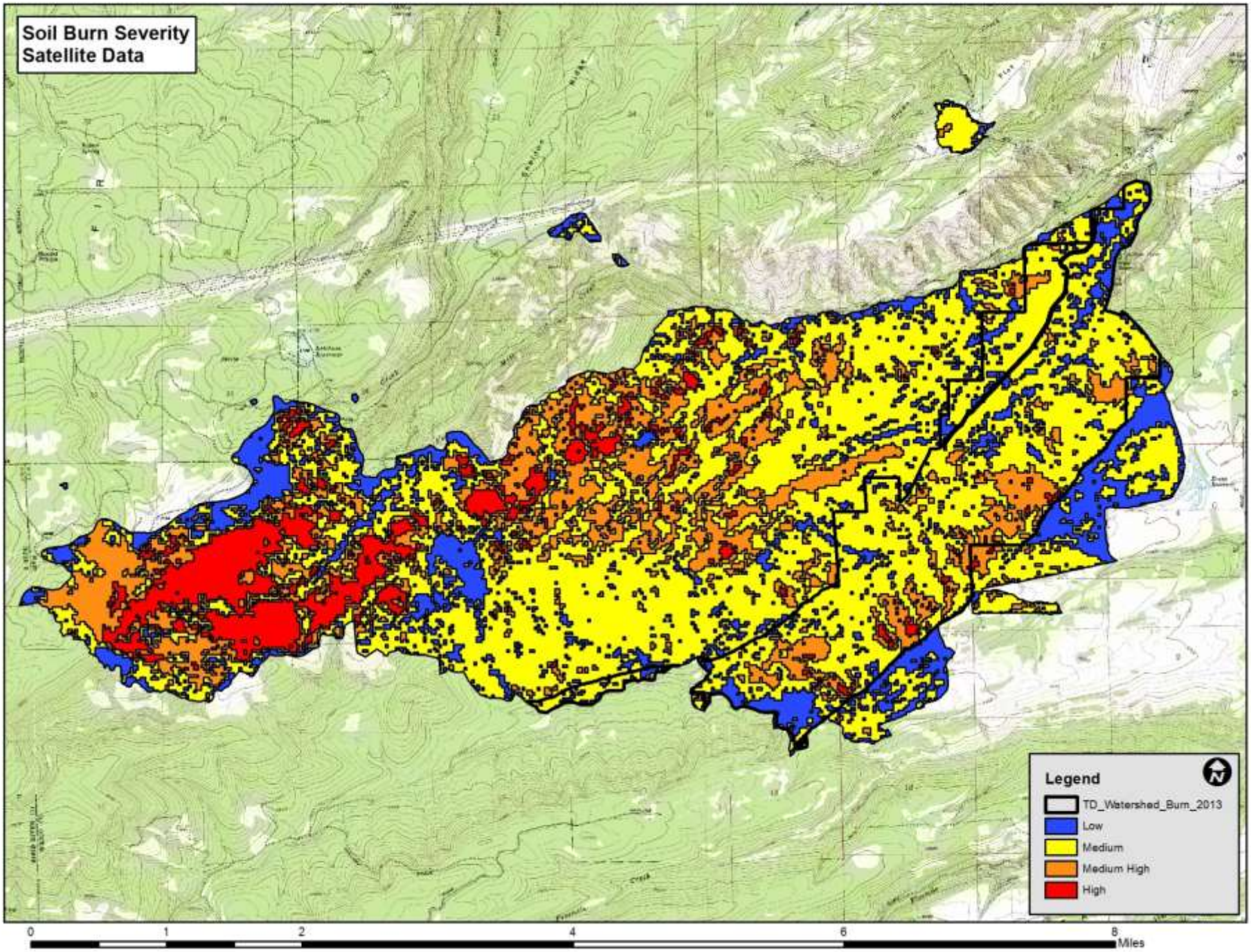
Impact and Recovery Planning

- City initiated Watershed rehabilitation discussions during fire – City staff, USFS, ODF
- Immediately after fire, larger inter-agency Watershed rehab work group formed:
  - Natural Resource Conservation Service (NRCS)
  - Wasco Co Soil & Water Conservation District (SWCD)
  - Oregon Dept of Environmental Quality (DEQ)
  - Oregon Dept of Forestry (ODF)
  - US Forest Service
  - The Dalles Area Watershed Council
  - City of The Dalles

Post-fire Concerns

The work group identified several potential post-fire concerns.

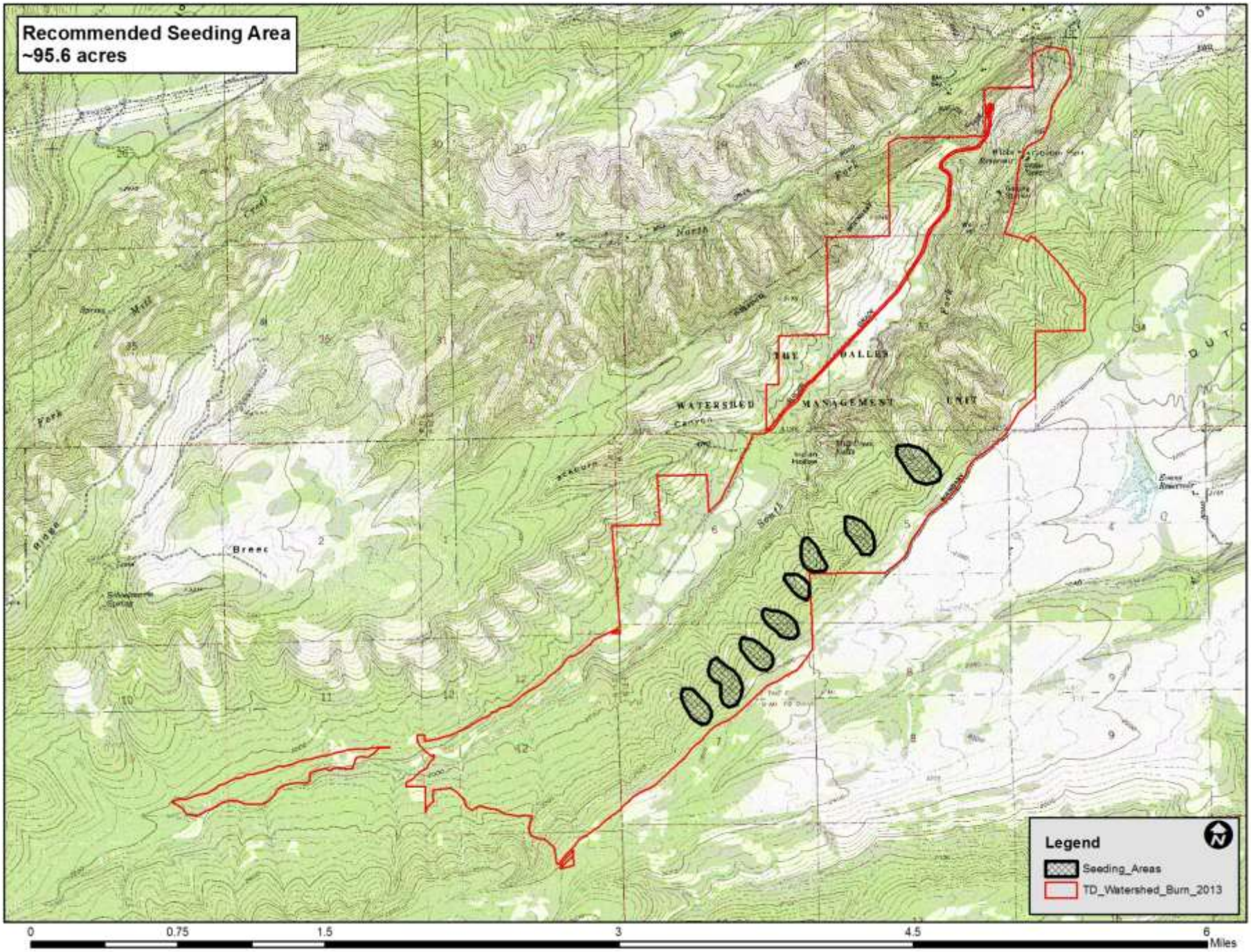
- Increased raw water turbidity from erosion of burned area
- Increased potential for landslides
- Potential debris flows
- Residual fire retardant contamination
- Increased risk of flooding along Mill Creek and within downtown The Dalles

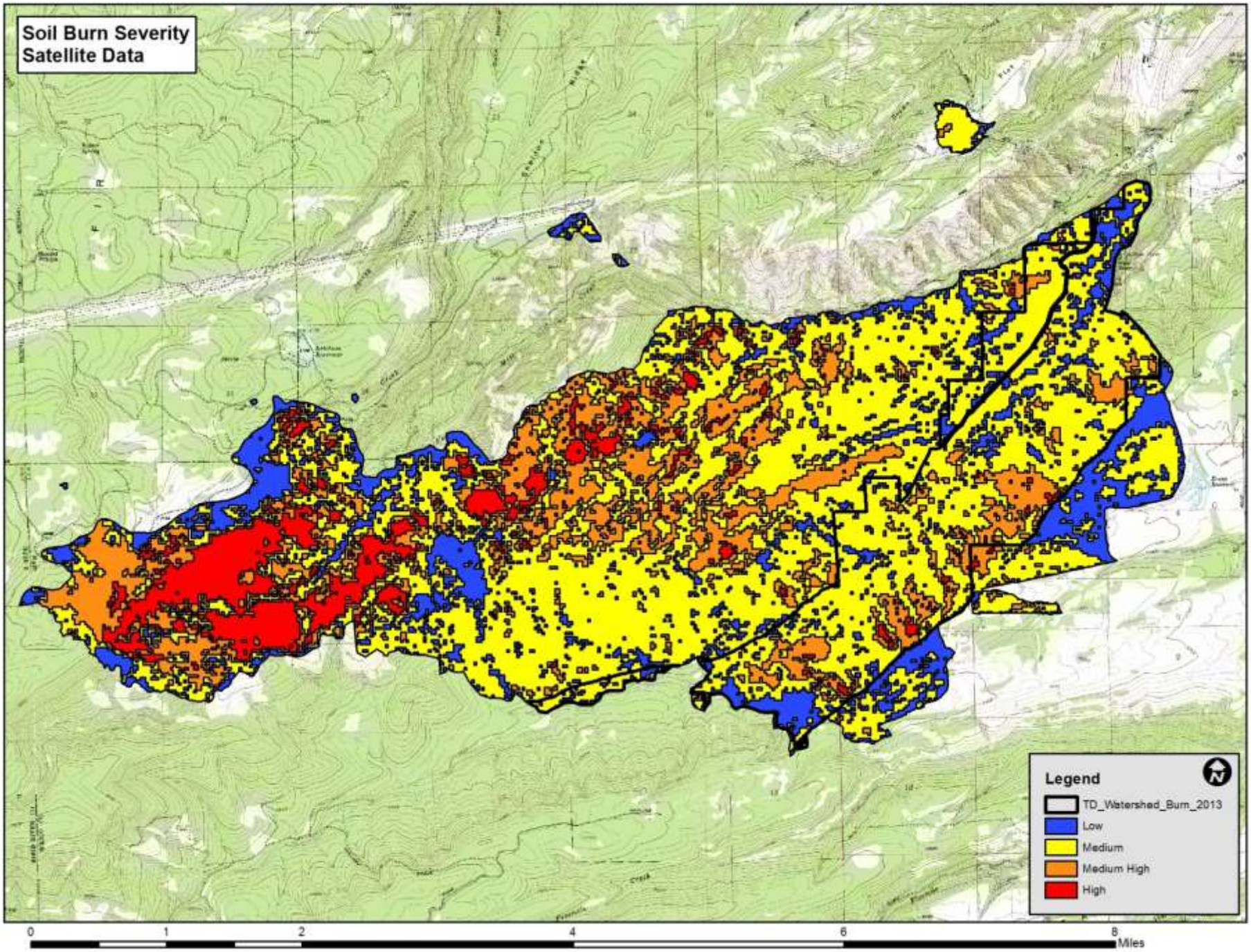

Soil Burn Severity
Satellite Data
Legend
TD_Watershed_Burn_2013
Low
Medium
Medium High
High
0
1
2
4
6
8
Miles

Rehabilitation Plan

Near-term tasks (completed immediately post-fire):

- Dozer lines and hand lines were water-barred and/or scattered with brush – suppression crews
- Bare-earth areas were roughed up and/or scattered with brush – suppression crews
- Natural recovery occurred in lower burn-severity areas
- Aerial grass seeding of 100 high-priority acres
- Inter-agency analyses and development of rehabilitation plan
- Contact with state and federal legislators for support of funding applications


Recommended Seeding Area
~95.6 acres
THE DALLES
WATERSHED
MANAGEMENT
UNIT
Legend
Seeding_Areas
TD_Watershed_Burn_2013
0
0.75
1.5
3
4.5
6
Miles


Soil Burn Severity
Satellite Data
Legend
TD_Watershed_Burn_2013
Low
Medium
Medium High
High
0
1
2
4
6
8
Miles

Rehabilitation Plan – cont'd

Mid-term active stabilization plan concepts:

- Aerial mulching with ag straw or wood shreds still under evaluation – too expensive
- Salvage logging of stands with high tree mortality completed
- Contour falling of trees in burned area completed in spring 2014 (ODF)
- Sediment detention systems was evaluated – silt fencing or wattles – not pursued

Rehabilitation Plan – cont'd

Long-term stabilization plan:

- Planted 165,000 Ponderosa Pine/Douglas fir to restore conifer component

Monitoring/Early Warning Systems

- Installed temporary precipitation monitoring station with telemetry within the burned area in cooperation with SWCD
- Installed temporary stream level gaging station with telemetry on North Fork Mill Creek in cooperation with USGS and SWCD
- Conducted post-fire and “first flush” raw water sampling at WTP intake by DEQ – all results negative for fire retardant indicators

Funding

- Pledged contributions - $61,260
  - Oregon Safe Drinking Water State Revolving Fund
    $30,000 grant
  - Oregon Wildlife Heritage Foundation
    $10,000 grant
  - City-County Insurance Services
    $7,500 grant
  - DEQ Supplemental Environmental Projects (2)
    $14,240 grant
  - Wasco Co. SWCD
    $5,000 grant
  - ODFW
    $3,000 grant

Funding – cont'd

- Grant application was submitted for USDA Emergency Watershed Protection program; federal government shutdown delayed submission and processing of application
- Oregon Watershed Enhancement Board funding – $115,122
- Local funds from City water utility and salvage logging - $45,000

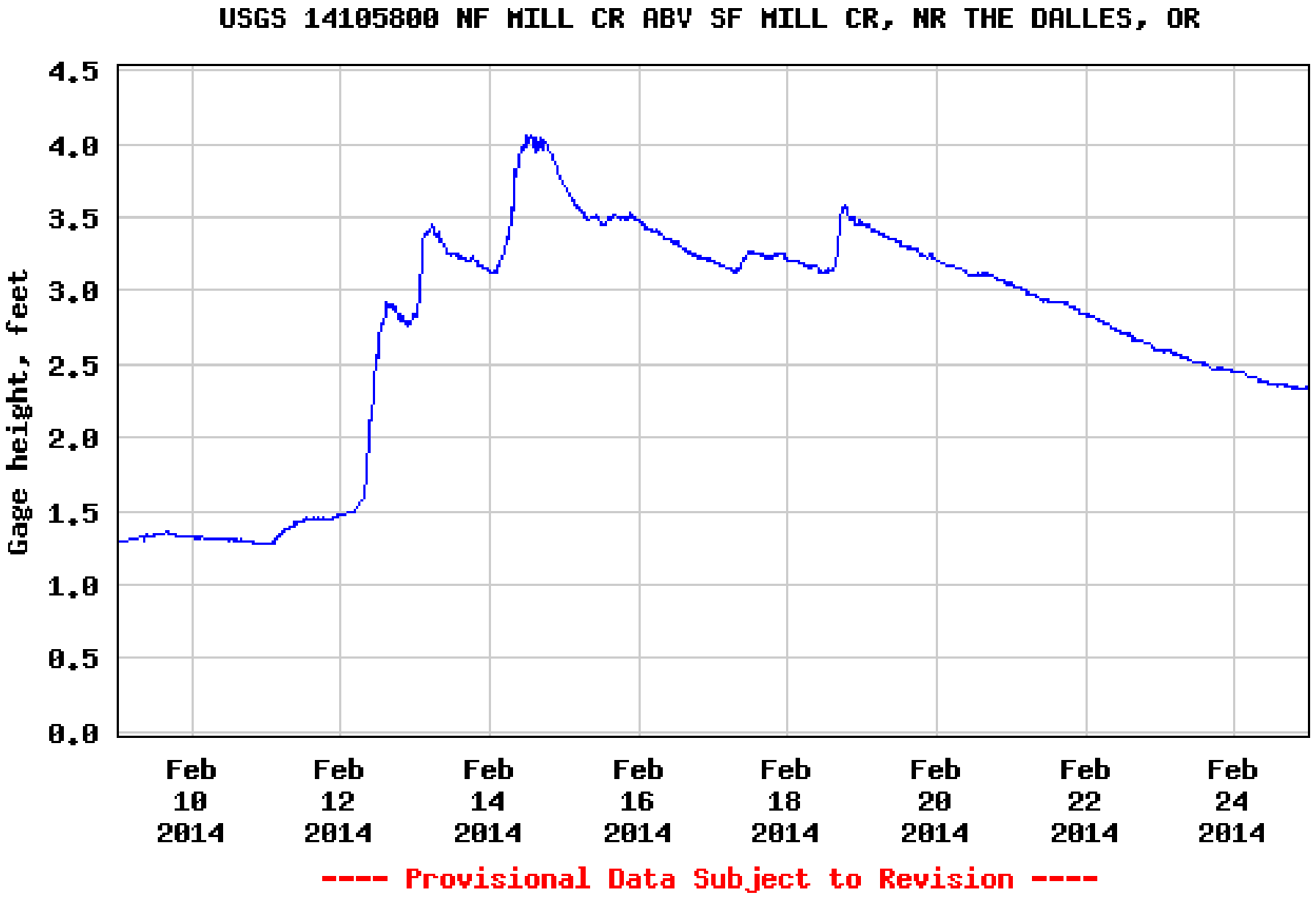
Post-fire Water Quality Impacts

September 2013 –

- First significant rain on the burn, heavy at times, total about 1” rain in 3 days
- No adverse water quality impacts

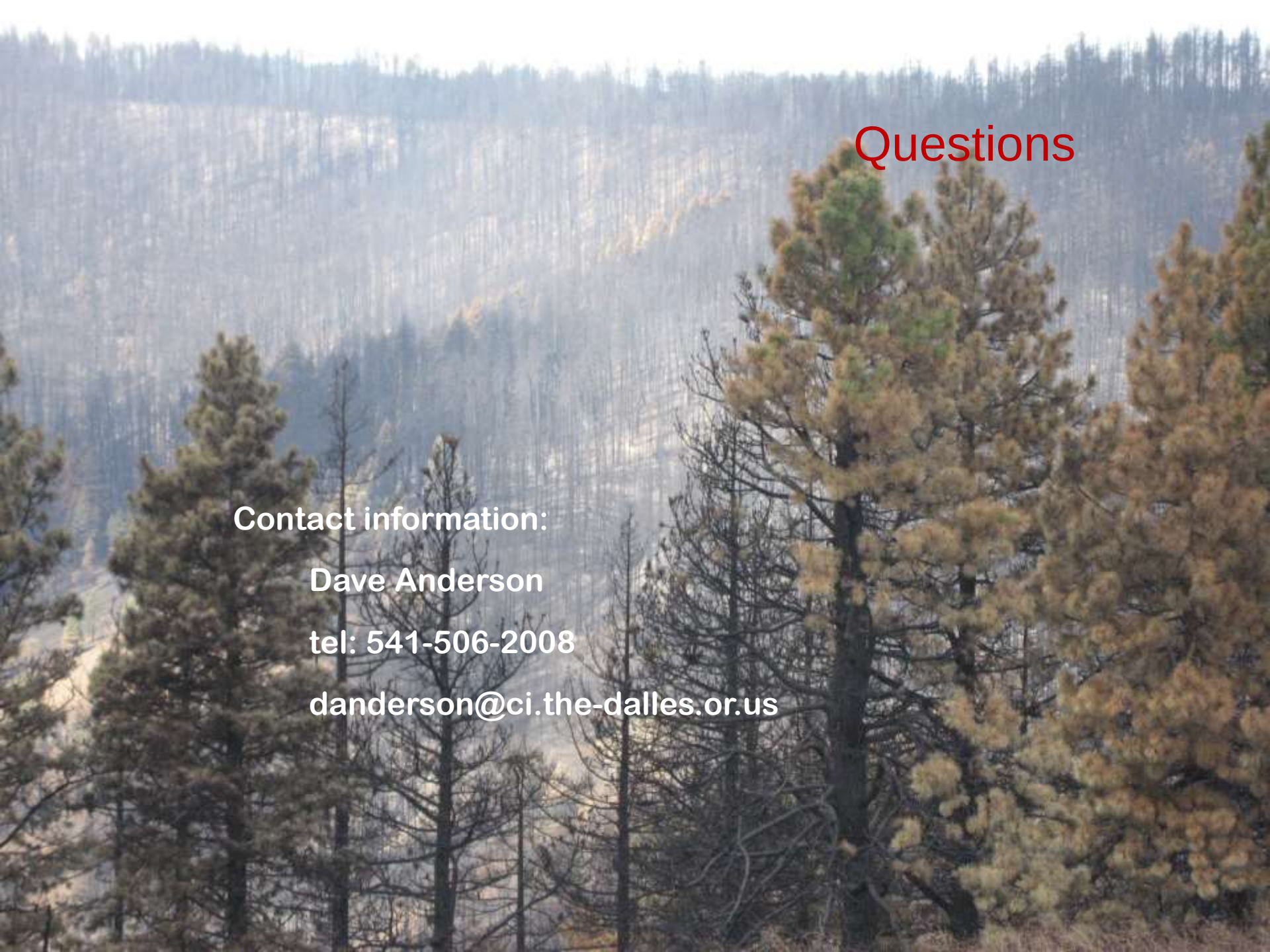
February 2014 –

- Rain-on-snow event
- About 18” snow on the burn area, frozen ground, then gradual warming with fairly continuous rain over 3 days
- Stream flow at WTP increased from 6 MGD to 96 MGD.
- Raw water turbidity spiked at 1760 NTU, several excursions >200 NTU; finished water quality <0.1 NTU


USGS 14105800 NF MILL CR ABV SF MILL CR, NR THE DALLES, OR
Gage height, feet
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Feb 10 2014
Feb 12 2014
Feb 14 2014
Feb 16 2014
Feb 18 2014
Feb 20 2014
Feb 22 2014
Feb 24 2014
---- Provisional Data Subject to Revision ----

After-thoughts

- Relationships - Watershed rehabilitation and recovery planning was facilitated because of the City's pre-existing relationships with other agencies
  - City and US Forest Service jointly manage the Watershed with a primary goal of protecting water quality/quantity, 40+ year partnership
  - City and ODF work closely on fire risk reduction planning
  - City and ODFW work together on Watershed fish passage and wildlife projects
  - City is a member of The Dalles Area Watershed Council; close relationship with SWCD/NRCS
- Know your neighbors and partners before the emergency arises
- Familiarity with the Incident Command System (ICS)



Questions

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Grass seed mix

Slender Wheatgrass (Revenue)	Elymus tracycaulus	2 lbs
Sheep Fescue (Covar or VNS)	Festuca ovina	1 lb
Thickspike Wheatgrass (Bannock)	Elymus lanceolatus	2 lbs
Hard Fescue	Festuca brevipila	1 lb
Orchard Grass	Dactylis glomerata	2 lbs
Pubescent Wheatgrass (Luna)	Agropyron trichophorum	3 lbs
Ladak Alfalfa	Medicago sativa	2 lbs
Small Burnett	Sanguisorba minor	1 lb
Spring Wheat or Spring Oats	Triticum spp. or Avena spp.	8 lbs
Total		22 lbs

- Broadcast (including aerial) application rate = 38-48 lbs/acre
- All seed certified to be noxious-weed free